

We claim:

1. A process for producing a floor covering, which comprises:

a) introducing at least two differing groups of elements with geometrically differing shapes into an applicator, equalizing the groups in the applicator, and depositing the elements in an application stream of the groups for at least partly forming a substantially non-repeating visible surface layer; and

b) needling at least the elements forming the surface layer to a non-woven base layer.

2. The process according to claim 1, which comprises carrying out the step of introducing the elements into the applicator in accordance with at least one predetermined mixing ratio.

3. The process according to claim 1, which comprises densifying the elements in at least one section of an exit duct of the applicator to form the application stream.

4. The process according to claim 3, which comprises carrying out the densifying step in a funnel-shaped section of the exit duct.

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5. The process according to claim 3, which comprises metering the elements into the section densifying the elements.
6. The process according to claim 1, which comprises at least one of laying, scattering and blowing the elements of the application stream onto the base layer.
7. The process according to claim 1, which comprises forming at least some of the elements by dividing a feed material.
8. The process according to claim 7, which comprises punching the elements out of the feed material.
9. The process according to claim 7, which comprises cutting the elements to form the feed material.
10. The process according to claim 1, which comprises forming at least some of the elements by dividing a feed material in ribbon or sheet form.
11. The process according to claim 1, which comprises forming at least some of the elements by initially dividing a feed material in sheet form in longitudinal direction and then essentially at right angles to the longitudinal direction of the feed material.

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12. The process according to claim 1, which comprises forming at least some of the elements by dividing a feed material having a thickness of from 3 to 10 mm.

13. The process according to claim 1, which comprises forming at least some of the elements by dividing a feed material selected from the group consisting of a non-woven and a needle felt.

14. The process according to claim 1, which comprises forming at least some of the elements by dividing a feed material selected from the group consisting of a non-woven and a needle felt having a basis weight between 200 and 1000 gr/m².

15. The process according to claim 1, which comprises forming at least a portion of at least one of the elements and the feed material from at least one of yarns and threads.

16. The process according to claim 15, which comprises forming at least a portion of the elements from yarn precursors.

17. The process according to claim 16, which comprises forming at least a portion of the elements from card slivers.

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18. The process according to claim 16, which comprises forming at least a portion of the elements from yarn precursors having a metric count of about 0.5 to 4.0.

19. The process according to claim 15, which comprises forming at least a portion of the elements from carded yarns having a metric count between about 0.5 and 5.0.

20. The process according to claim 15, which comprises forming at least a portion of the elements from carded threads.

21. The process according to claim 20, which comprises forming at least a portion of the elements from carded threads having a metric count between about 0.5/3 and 5.0/3.

22. The process according to claim 15, which comprises forming at least a portion of the elements from semi-worsted yarns having a metric count between about 2.0 and 8.0.


23. The process according to claim 15, which comprises forming at least a portion of the elements from semi-worsted threads.

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24. The process according to claim 15, which comprises forming at least a portion of the elements from semi-worsted threads having a metric count between about 2/2 and 8/2.
25. The process according to claim 1, which comprises forming at least a portion of the elements from textile pieces.
26. The process according to claim 1, which comprises forming at least a portion of the elements from woven pieces.
27. The process according to claim 1, which comprises forming the elements from at least one of natural and synthetic materials.
28. The process according to claim 1, wherein the base layer to which the elements forming the surface layer are applied, is an unconsolidated base layer.
29. The process according to claim 28, which comprises consolidating the unconsolidated base layer during the step of needling the elements to the base layer.
30. The process according to claim 1, which comprises consolidating at least one of the base layer and the surface layer by chemical binders.

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31. The process according to claim 1, which comprises providing at least one further layer on a surface of the base layer remote from the surface layer.

 32. A floor covering, comprising:

a base layer formed of a non-woven; and

a visible, substantially non-repeating surface layer formed by a multiplicity of elements having different geometric shapes, said elements formed of at least one material selected from the group consisting of yarns, threads, yarn precursors, carded slivers, carded yarns, lifting yarns and needle-felt-like elements, and said elements applied and needled at least to said base layer.

33. The floor covering according to claim 32, wherein said base layer is unconsolidated upon application of said elements forming said surface layer, and said unconsolidated base layer is consolidated during needling of said elements forming said surface layer to said base layer.

34. The floor covering according to claim 32, wherein said surface layer is formed by at least two plies of said elements.

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35. The floor covering according to claim 32, wherein at least a portion of said elements includes fibers oriented in a preferred direction.

36. The floor covering according to claim 32, wherein said needle-felt-like elements have a basis weight between 200 and 1000 gr/m².

37. The floor covering according to claim 32, wherein at least a portion of said elements is formed by yarn precursors having a metric count of about 0.5 to 4.0.

38. The floor covering according to claim 32, wherein at least a portion of said elements is formed by at least one of carded yarns having a metric count between 0.5 and 5.0 and carded threads having a metric count between 0.5/3 to 5.0/3.

39. The floor covering according to claim 32, wherein at least a portion of said elements is formed by at least one of semi-worsted yarns having a metric count between 2.0 and 8.0 and semi-worsted threads having a metric count between about 2/2 and 8/2.

40. The floor covering according to claim 32, wherein at least some of said elements have a length of about 3 to 120 mm.

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41. The floor covering according to claim 32, wherein at least some of said elements have a length of about 3 to 10 mm.

42. A plant for producing a floor covering, comprising:

an applicator including:

at least one application station;

a housing defining a space and having an upper wall;

at least one supply duct ending in said space in the vicinity of said upper wall;

a metering device disposed in said at least one supply duct;

an equalizing unit disposed in said space; and

an exit duct having a metering unit disposed therein and having at least one section in the form of a densifying shaft for applying geometrically different elements onto a surface of a base layer to form a substantially non-repeating surface layer; and

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at least one needling device for needling the surface layer to the base layer.

43. The plant according to claim 42, wherein said applicator is an aerodynamic scattering apparatus.

44. The plant according to claim 42, wherein said exit duct includes at least one vibrating section.

45. The plant according to claim 42, wherein said exit duct includes a section having a changeable cross section.

46. The plant according to claim 42, wherein said exit duct includes a section formed by at least two mutually opposite and spaced apart endless driven belts.

47. The plant according to claim 46, wherein said belts have an adjustable speed.

48. The plant according to claim 42, wherein said exit duct is substantially vertical.

49. The plant according to claim 42, including at least one mixing device attached to said application device.

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